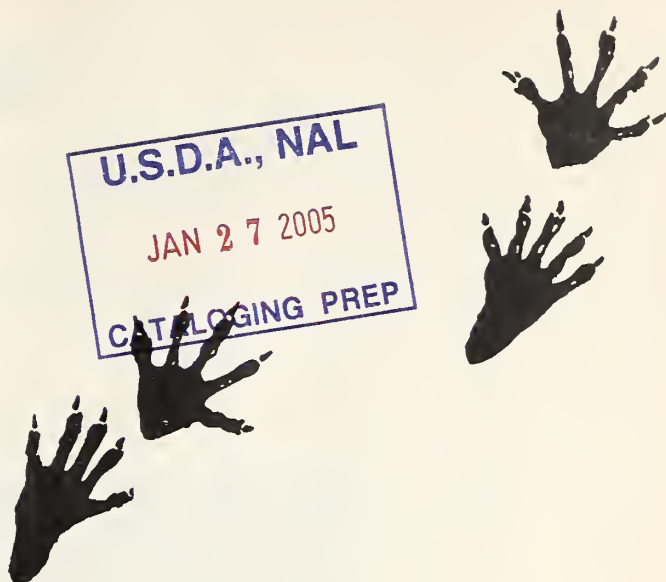
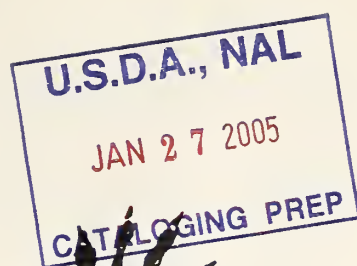


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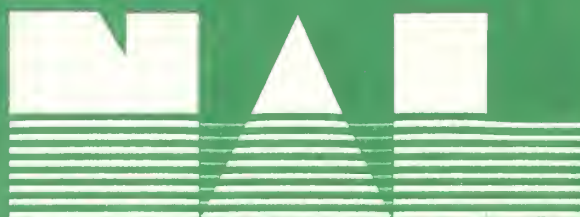


A GUIDE TO THE MAMMALS OF THE SANDIA MOUNTAINS



CIBOLA NATIONAL FOREST — SANDIA RANGER DISTRICT
U.S.D.A. — SOUTHWESTERN REGION — FOREST SERVICE

**United States
Department of
Agriculture**



National Agricultural Library

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INTRODUCTION:

What is a mammal? Animals are divided into groups such as fishes, birds, reptiles, amphibians, and mammals. Members of each group have one or more characteristics that members of any other group do not have. Mammals have two such characteristics. First, they produce milk for nursing their young. They also have true hair or fur. And, except for the egg-laying mammals of the Australian region, all mammals bear living young.

Mammals came into existence as a distinct group of animals 155 to 160 million years ago. The Sandias did not develop as a mountain range until about 30 million years ago. This means that probably there have been mammals living in the Sandias since the mountain's beginning and throughout its geological development. We know very little about these Sandia mammals before the last glacial period about 25,000 years ago. From animal remains uncovered by erosion and man's activities (such as road building) we know that during that glacial era there lived in the Sandias prehistoric mastodons, mammoths, camels, and horses.

The kinds and numbers of animals in the Sandias or any area are constantly changing. Before man entered the picture, changes occurred very slowly, but man's activities can cause rapid changes or even eliminate animal and plant populations in a few years. For example, a hundred years ago there lived in the Sandias grizzly bears, true wolves or lobos, and prong-horn antelope. These are gone now, mainly due to man's influence. Other animals disappeared from the Sandias and then reappeared, either by coming in from other areas, or by being transplanted by man. The black bear, Rocky Mountain Bighorn, and mountain lion are examples of these.

Most of the Sandia Mountains area is within the 115,000-acre Sandia Ranger District, one of six districts in the Cibola National Forest. The Forest Service's District Ranger manages the habitat, the land and vegetation that feed and shelter the wildlife, but the wildlife itself is managed by the New Mexico Department of Game and Fish. This means that there must be extremely close cooperation between these agencies.

The Sandia Mountains have been designated by the State Department of Game and Fish as a Wildlife Refuge. The use of guns is not allowed here. This accomplishes two things. It offers maximum protection to the bighorn sheep herd, and it provides maximum safety for the mountain's numerous hikers and visitors. Bow hunting of deer has been allowed during the last several years. Bows are considered less dangerous to wildlife and people because of their limited range.

The species of mammals found on the Sandias are greatly diversified because the area encompasses four major vegetative or life zones. For a person at sea level to equal the ecological changes that occur from the base of the Sandias at 6,400 feet to the Sandia Crest at 10,678 feet he would have to drive from the Southern tip of California to British Columbia, Canada. Mountains like the Sandias represent islands of green in a sea of desert. The variety in plant and animal forms is due to the increased precipitation and reduced temperature as altitude increases.

We hope that this "Guide to Mammals of the Sandia Mountains" will make your visit to the Cibola National Forest more enjoyable as a result of your better understanding of the mammals found on this remarkable mountain. "A Checklist to the Birds of the Sandia Mountains" is available at the Sandia Ranger Station to help you increase your knowledge of the birds found here.

Thomas M. Smylie
Forest Naturalist
Sandia Ranger District

ACKNOWLEDGEMENT

The Forest Service thanks Dr. James S. Findley, Professor of Biology, University of New Mexico, for supplying the list of mammals and their habitat distribution. The conspicuous mammals of the forest such as bighorn sheep, deer, bear, and so forth are easily identifiable. However, to know the less conspicuous creatures that are seldom seen, such as the shrews, requires careful study and many hours of scientific observation. Dr. Findley is an expert in this field. He will soon have a book published called the "Mammals of New Mexico".

INSECT-EATERS - Insectivora

SHREWS - Soricidae

The shrew is the smallest mammal in America. Its size and secretive habit of living underground combine to make it among the least known of native animals. The shrew is more streamlined than the mole, but does not have spade-like forefeet, and is not as ambitious a digger. The shrew is usually brown to black on top with sides and underparts drab gray. The eyes and ears are so small that they are difficult to see.

Shrews are classed as insectivores or insect-eaters although they eat other small mammals too. Even though the shrew is the tiniest of the mammals, it is also the fiercest. They can slash lightning fast with venomous bites that can paralyze a mouse. Most shrews have poison glands in their lower jaws, but the venom is secreted in such minute quantities that it has little effect on humans.

Enormous appetites packed into tiny bodies make life one meal after another for the shrew. Considered enemies by gardeners, they are really allies in the control of Japanese beetles and cutworms. A mole may eat its weight in insects every 24 hours, but the smaller more voracious shrew can do the same in three hours. If deprived of food for a day, the shrew may starve to death.

Shrews found in the Sandias are:

VAGRANT SHREW - *Sorex vagrans*:

The vagrant shrew is 4 to 5 inches in length with a tail $1\frac{1}{2}$ to 2 inches long, and has a long nose. It is found in and above the ponderosa pine zone in the Sandias.

DWARF SHREW - *Sorex nanus*:

The dwarf shrew is $4\frac{1}{4}$ inches long with a $1\frac{3}{4}$ inch tail. They have a grayish brown coat with a indistinctly bi-colored tail. Found in mixed coniferous forest areas of the mountain.

MERRIAM'S SHREW - *Sorex merriami*:

The Merriam's shrew is $3\frac{3}{4}$ to 4 inches long with a $1\frac{1}{2}$ inch tail. Their color is more gray than the dwarf with underparts and feet nearly white. They are found in woodland and mixed coniferous forest.

BATS - Chiroptera

Because there are so many bats and species of bats, the flying mammal can be described only briefly here. Local populations are influenced by migrating outsiders such as the eastern, northern, western and Mexican species.

Bats are generally identifiable by the following characteristics: large ears; fingers especially adapted to form a wing in which the bony frame is covered by a large leather-like membrane; a mouse-like appearance; and nocturnal feeding habits. The majority of species is insectivorous. During the winter and daytime, bats hibernate in cool isolated areas such as caves or hollow trees. Bats are often seen in late evening in areas where large numbers of insects congregate.

Species of bats found in the Sandia Mountains are:

FRINGED MYOTIS - *Myotis thysanodes*
LITTLE BROWN MYOTIS - *Myotis lucifugus*
KEEN MYOTIS - *Myotis keeni*
LONG-LEGGED MYOTIS - *Myotis volans*
SMALL-FOOTED MYOTIS - *Myotis subulatus*
SILVER-HAIRED BAT - *Lasionycteris noctinagans*
BIG BROWN BAT - *Eptesicus fuscus*
HOARY BAT - *Lasiurus cinereus*
WESTERN BIG-EARED BAT - *Plecotus townsendi*
PALLID BAT - *Antrozous pallidus*
MEXICAN FRETAIL BAT - *Tadarida brasiliensis*

FLESH-EATERS - Carnivora

BEARS - Ursidae

BLACK BEAR - *Ursus americanus*

Black bears aren't necessarily black. They come in assorted hues of cinnamon, dark brown, and jet black. The black bear is not large compared with other species. However, it is still a formidable animal of the forest. Some grow to five and six feet in length and weigh from 200 to 500 pounds.

The black bear was probably eliminated from the Sandia Mountains during the late 1800's or early 1900's. Black bears were reintroduced to the range several times during the 1930's through the 1950's. The population now is estimated to be about 10 to 12 individuals. The black bear has fared far better in the hands of man than its aggressive and larger cousin, the grizzly, with its appetite for livestock. Probably the last grizzly in the State of New Mexico was killed during the 1920's in the Sangre de Cristo Mountains.

Not a fussy eater, the black bear would just as soon dine on a dead animal carcass or garbage dump as it would on its more natural diet of berries, roots, grass, ants, bark, and honey. The Sandia black bears have remained wild and have not formed the habit of begging for food like bears found in many areas. They are seldom seen by the casual visitor to the mountain. During the summer months, they are most commonly found in the high, thick spruce-fir areas of the mountain, with occasional forays through the trash containers in the picnic areas. Although presenting a deceptively friendly appearance and usually a pattern of withdrawal from humans, the bear should always be respected because of its great strength and unpredictable behavior.

RACCOONS - Procyonidae

RACCOON - *Procyon lotor*

The raccoon presents an impression of a robust bandit with a noticeable black facial mask. Although found throughout the United States, its size and color will vary considerably from one part of the country to another. A raccoon found in New Mexico will weigh between 8 to 14 pounds, have a length of 28 to 32 inches, and have a pale yellowish-gray coat with a bushy tail.

Although raccoons were not plentiful in the State prior to World War II, they are now common in most of the mountain ranges. Footprints near springs and streams often betray their presence in the Sandias. They are seldom seen, however, because of their nocturnal feeding habits. Because they will eat almost anything, they often get themselves into trouble with local residents by killing poultry. However, like many animals of the forest, when kept in proper population balance they destroy many pests.

RINGTAILS - Bassariscidae

RINGTAILED CAT - *Bassariscus astutus*

The ringtailed cat might best be described as a squirrel-like raccoon with short legs. The ringtail's most distinguishing physical characteristics are its large eyes and its long bushy tail, the source of its name. When fully grown, the ringtail will weigh 2 to 2½ pounds, be 20 to 24 inches long, and will have a 10 to 12 inch tail. The ringtail is a brownish-gray color with bands of black and white on its large bushy tail.

The ringtailed cat is common in the State, but because of its nocturnal feeding habits, it is seldom seen. Although closely associated with the pinyon-juniper habitat, they are known to exist in the spruce-fir elevations in the Sandia Mountains, but are not numerous there.

A wonderfully agile night traveler, it leaps from point to point on cliffs and ledges, using the flattened tail as a balancer. A 10 foot leap requires little effort. The ringtail eats insects, bats, birds, rats, and other rodents.

WEASELS, SKUNKS, ETC. - Mustelidae

LONG-TAILED WEASEL - *Mustela frenata*

The long-tailed or bridled weasel is 12 to 14 inches long and weighs 4 to 7 ounces. The summer coat of the long-tailed weasel will be brown with underparts buffy from chin to groin. The long-tailed weasel, like all members of the weasel family, possesses a reckless courage and will fight and often defeat animals many times larger. The weasel is an avid hunter, preying primarily on rodents but also on mammals the size of an adult rabbit, as well as birds, reptiles and insects. Like many predatory animals, weasels are most active at night. They may be seen in daylight because of their unlimited energy. Even though the long-tailed weasel is more often found in the spruce-fir areas of the mountain, they turn up anywhere, including semi-arid grasslands.

SPOTTED SKUNK - *Spilogale putorius*

The spotted skunk or civet cat is much smaller than the striped skunk, being only 12 to 22 inches in length and weighing 1 to 3 pounds. Although having the distinctive black and white marking of skunks, the spotted skunk also has spotted markings. No other North American mammal has this pattern of white and black breaking into spots on the rump, and no two spotted skunks have the same pattern of markings.

The spotted skunk is much more agile than its larger relative, the striped skunk, and is an extremely capable tree climber when frightened. Of course, when aroused, the spotted skunk will resort to its scent to ward off enemies. The spotted skunk has the same nocturnal hunting and feeding habits of its larger cousin. It is generally found in lower elevations of the pinyon-juniper woodlands and grasslands.

STRIPED SKUNK - *Mephitis mephitis*

The striped or common skunk is about the size of the average house cat, 24 to 30 inches in length. It weighs from 4 to 10 pounds. The most distinguishing feature of this skunk is its silky black coat with a double midline strip of white that extends into its large bushy tail.

This four-legged fumigator can release an offensive scent from glands in the anal opening. Because of this highly effective defense mechanism it ambles along without fear. This is one reason why so many are killed on highways.

There are many striped skunks in the Sandias, but being nocturnal they seldom are observed. The skunk feeds on small rodents (mainly mice), lizards, frogs, toads, insects and grubs. Its only natural enemy, the great horned owl, seems to be oblivious to its smell.

HOG-NOSED SKUNK - *Conepatus leuconotus*

The two-toned hog-nosed skunk is well named because of its hairless, pig-like snout. Another distinguishing characteristic is an all white back and tail. The rest of the short coarse fur on the lower sides and belly is black. The hog-nosed skunk, 25-33 inches long, is the largest of the skunks.

The hog-nosed skunk is a rare resident of the broken foothill and grassland areas of the Sandia Mountains. Like other members of the skunk family the hog-nosed is nocturnal, sluggish, shy, and equipped with scent glands for defense. However, it tends to get more of its food (insects, snails and slugs, small mammals, reptiles, and some vegetation) by digging and rooting.

BADGER - *Taxidea taxus*

The badger is built like a tank -- stout framed, compact, underslung and broad-shouldered. It is so fierce a fighter that nothing its size can overcome it. The badger will be 25 to 30 inches long but only 8 to 9 inches high at the shoulder, with a weight of 20 to 30 pounds. They have a long shaggy coat of grayish-yellow with paler underparts.

The badger can be found throughout the Sandia Mountains but is more common in the grasslands and foothills.

Badgers have a noble position in Indian mythology by being directly connected with the coming up of the Indian people from the underworld. This mythology was probably due to the badger's digging ability in search of rodents such as gophers and prairie dogs upon which they commonly prey.

WOLVES AND FOXES - Canidae

COYOTE - *Canis latrans*

The coyote's color and size varies through the wide climatic ranges in which it is found. In general they resemble a rather small, lean German shepherd

dog with yellow eyes. A good field mark is the bushy tail, carried low when the animal runs. The coyotes are lean and light despite the bulkiness suggested by the long tawny to reddish-gray fur. A large coyote will seldom weigh more than 30 pounds, and will have a total length of from 43 to 55 inches and stand 12 to 15 inches high at the shoulder.

For a century, man has tried to exterminate this intelligent, omnivorous and prolific carnivore. But today, despite all man's efforts, the coyote is as numerous as ever and has even extended its range. They are usually seen on the Sandias in the more open pinyon-juniper terrain of the foothills in the evening or early morning when they leave or return from nightly feeding expeditions. Like many desert animals, this cunning and resourceful hunter does most of its hunting at night when it often betrays itself with its high-pitched bark. It feeds on an extremely diversified diet of carrion, reptiles, birds, rodents, and insects.

It sometimes kills young livestock and wildlife, but probably does as much good as harm by helping in the control of damaging rodents.

WOLF (LOBO) - *Canis lupus*

In the days before Europeans came to New Mexico the wolf was found in the Sandias and throughout the North American Continent. Slowly this fierce, intelligent, wild dog has retreated. Excluding the wilds of Alaska, Canada and Mexico, today's survivors are found in small isolated bands in a few states on the Canadian and Mexican borders. Although the southwestern wolf was originally a hunter of the open plains it was forced to retreat into the broken country of the pinyon-juniper areas and on up to timberline.

The southwestern wolf had the general physical appearance of the coyote but was considerably larger, occasionally weighing more than 150 pounds. It was 26 to 28 inches high at the shoulder, and 55 to 67 inches in length.

SWIFT FOX - *Vulpes velox*

Scarcely larger than a house cat, the swift fox is the smallest of the North American foxes, weighing only 4 to 6 pounds. It stands 9 to 12 inches high at the shoulder and is 24 to 31 inches long. The swift fox's usual color in the Southwest is a pale buffy-yellow with a black-tipped tail and dark spots on either side of the nose.

The swift fox is a rare resident of the Sandia Mountain grasslands. It is a nocturnal hunter and therefore seldom seen. When seen, it is extremely quick and graceful, often disappearing into a badger hole or other shelter. Shy and guileless, this handsome little wild dog does not have the red fox's cunning or the coyote's sophistication. The swift fox has been thinned out in many areas by poisoned bait put out for coyotes.

GRAY FOX - *Urocyon cinereoargenteus*

The predominantly nocturnal gray fox appears somewhat more cat-like than dog-like because of its short ears and muzzle. The gray fox, 7-13 pounds, is considerably smaller than the coyote. It grows to 14 to 15 inches high at the shoulder and 36 to 44 inches in length. In the southwestern arid regions the gray fox has a gray coat with a washed-out orange cast, and with orange, black and white markings.

The gray fox is the most common fox in the Sandias. It prefers the juniper-pinyon woodland areas but may occur in any zone in the Sandias. It hunts rabbits, mice, and other small mammals. Although a predator, the fox does little damage to game or livestock and is considered by conservationists to be an extremely valuable, natural controller of rodents. The gray fox has a unique habit of climbing trees when being pursued by enemies - hence often being called the "tree fox."

CATS - Felidae

MOUNTAIN LION - *Felis concolor*

The mountain lion is a large, tawny-colored cat with a long, heavy tail ending in a tassel of coarse dark hair. When mature, it weighs from 80 to 220 pounds.

The mountain lion is the largest predator found in New Mexico's mountain rimrock and timbered terrain. Although no other North American mammal has so large a range, varying from the jungles and deserts of Old Mexico to the cold mountain tops of Canada, the mountain lion is seldom seen. Although it possesses a fearsome reputation, there have been few authenticated cases of mountain lions attacking humans. When man is near, the lion will flee whenever possible, and even when cornered it is not nearly so pugnacious as its little cousin the bobcat. To sight a mountain lion in its natural habitat is rare and often a once in a lifetime experience. Although mountain lions are known to live in the Sandia Mountains, primarily by sign and tracks, only a few sightings have been recorded. Because the lion preys mainly on old, sick and weak members of deer herds, it is now considered an asset for the natural stabilization of healthy herds. When predators like this are eliminated, deer populations often expand beyond control, destroying all available food and resulting in losses reaching epidemic proportions.

BOBCAT - *Lynx rufus*

The bobcat is a chunky bob-tailed feline about 30 to 35 inches long and weighing 15 to 40 pounds. The sides of the face are heavily streaked with black. It has black, tufted ears and a coat that is generally tawny to reddish above and lighter below.

The bobcat is found throughout New Mexico regardless of terrain or its human population. They are abundant but seldom seen on the Sandia Mountains. Like most members of the cat family the bobcat is wary of man but, when cornered, earns its other name, wildcat, by becoming a snarling, hissing bundle of claws and fangs. The adaptable bobcat lives wherever there is enough forest or brushland to provide adequate cover and food. It will prey on anything from birds to fawns. In the Southwest it has proved to be a valuable check on populations of rabbits and other destructive rodents.

GNAWING MAMMALS - Rodentia

SQUIRRELS - Sciuridae

GUNNISON (WHITE-TAILED) PRAIRIE DOG - *Cynomys gunnisoni*

The Gunnison, or white-tailed prairie dog is a large stout-bodied ground-dwelling rodent somewhat resembling a large ground squirrel. Fully grown it is $12\frac{1}{2}$ to 15 inches and weighs from $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds. Its body color is buff to cinnamon buff with a short-bushy tail tipped with white.

The white-tailed prairie dog is found in the upland meadows and slopes of the Sandias, while its close relative, the black-tailed prairie dog, is found in the flat prairie areas. This gregarious, mound-building rodent was common near Albuquerque before settlers arrived. However, because burrows endangered horses and livestock, the prairie dogs were destroyed. Only a few small isolated prairie dog communities can now be found near the Sandias.

GROUND SQUIRRELS - *Citellus*

Ground squirrels are basically creatures of the earth but do climb trees. Unlike the busy, fast-moving chipmunks, the ground squirrels are more sedate. They seem to plan every move and never hurry. Also, chipmunks have striped faces while ground squirrels do not.

Ground squirrels primarily feed on plants but eat large quantities of insects during summer months.

Of the 27 recognized species of ground squirrels in North America, three are common to the Sandias:

GRAY-TAILED ANTELOPE GROUND SQUIRREL - *Citellus interpres*

A small and stockily built squirrel with upper parts pinkish cinnamon, more or less darkened with brown, and a narrow white stripe on each side from shoulder to hip. It is 9 to 10 inches long and weighs 4 to 5 ounces. The gray-tailed antelope ground squirrel is more active, nervous, and chipmunk-like than other species of its family. It can also be readily identified in the field by the habit of carrying its tail straight up or curved along the back while running. This squirrel is found in the rocky foothills and pinyon-juniper woodlands of the Sandia Mountains.

SPOTTED GROUND SQUIRREL - *Citellus spilosoma*

The spotted ground squirrel is a small to medium size ground squirrel, $8\frac{1}{2}$ to 10 inches in length and weighing 3 to 4 ounces. Its coloring is grayish to pinkish-brown above with more or less squarish white or buffy spots. Underparts are buff or white. The spotted ground squirrel is common in the open grasslands of the Sandia's foothills.

ROCK SQUIRREL - *Citellus variegatus*

The rock squirrel is 13 to 21 inches long. It looks very much like a tree squirrel because of its relatively long bushy tail. The rock squirrel's general color tone is brownish to blackish-brown, somewhat broken into a fine mottled pattern. The rock squirrel prefers to live in rocky or broken terrain. It may be found from the open grasslands to coniferous forest whenever a suitable rocky terrain is found.

WESTERN CHIPMUNKS - *Eutamias*

COLORADO CHIPMUNK - *Eutamias quadrivittatus*

The Colorado chipmunk's markings and habits are the same as chipmunks found throughout the Western United States. A striped face identifies the chipmunk. In addition to the facial stripes, chipmunks also have white-bordered black stripes along the back. The southwestern chipmunks are predominantly reddish, chestnut and grayish white with underparts considerably lighter than the back. The Colorado chipmunk is basically identical to the least chipmunk except that it is larger--8 to $9\frac{1}{2}$ inches long. It is common at all elevations in the Sandia Mountains.

The Colorado chipmunk is commonly seen in the vicinity of the Summit House Restaurant and the Sandia Crest Vista area. They are known to inhabit all elevations. The Colorado chipmunk is a true ground dweller and will scamper into cracks and logs when frightened. Normally shy creatures at first acquaintance, their friendship can be encouraged to the point of becoming unwelcome when provided with food. Their natural diet varies widely according to their habitat, but consists primarily of seeds, berries, acorns, and pine nuts. Observing this pretty, active little rodent hurrying about stuffing its cheek pockets with food and hurrying off to store it for winter is an enjoyable sight for young and old alike.

LEAST CHIPMUNK - *Eutamias minimus*

The least chipmunk is the smallest of the species. It is $6\frac{2}{3}$ to 9 inches long and has a long tail that is carried straight up when running. The least chipmunk is extremely rare in the Sandias.

SPRUCE SQUIRREL - *Tamiasciurus hudsonicus*

The spruce squirrel is small and gray. It grows to 13 to 14 inches in length with a tail 5 to 6 inches long and weighs 5 to 11 ounces. The coat is brownish-gray in the summer becoming olive-gray in the winter. The belly and feet are white. The spruce squirrel is found only in the higher elevations of the Sandia Mountains in the spruce-fir forest. The lively habits and noisy chatter of these squirrels make their presence conspicuous. Spruce as well as Abert squirrels carry on an important process in the forest. Their simple mechanics of storing tree cones in the ground results in the proper planting of fertile seeds which develop into trees which the squirrel is dependent upon for food and shelter.

TASSEL-EARED (Abert) SQUIRREL - *Sciurus aberti*

The Abert is a large, heavy-bodied tree squirrel with broad tufted ears and a large bushy tail. The Abert and its cousin, the Kaibab squirrel, are the only squirrels in the United States with conspicuous tufts of hair on the tips of their ears. The Abert squirrel will have a body length of 19 to 21 inches and weigh from $1\frac{1}{2}$ to 2 pounds. The most notable features of this squirrel are the coloring of its coat and its extremely large bushy tail. Its winter coat has an all-over blue-gray cast with a rich brown color on the middle of its back and a white vest above. The summer coat is the same, but the colors are not as pronounced.

The Abert squirrel is commonly found around the lower picnic areas of the Sandia Mountains in the ponderosa forest but may occur to the Crest. According to the New Mexico Game and Fish, the Abert squirrel was introduced into the Sandias. Of the many species of animals found as associates of this forest, probably none is more dependent on the ponderosa pine than the Abert squirrel. This rough-barked tree is a major source of food and shelter. The Abert squirrel feeds on the nuts and young twigs of the ponderosa pine as well as other types of vegetation such as flowers, leaf buds, and acorns of scrub oak. A good look at this beautiful species is an experience to be remembered.

POCKET GOPHERS - Geomyidae

SOUTHWESTERN POCKET GOPHER - *Thomomys bottae*

The pocket gopher is characterized by a short, bare, blunt tipped tail, small eyes and ears, a short stocky well-muscled body, and long, curved front claws. The pocket gopher is $6\frac{1}{2}$ to 10 inches in length. Its coat is gray, washed with brown. It has fur-lined external cheek pouches.

The pocket gopher is one of nature's most efficient digging machines. This busy bundle of fur can tunnel two or three hundred feet in a night. Various species are found throughout the continent but because of their subterranean hermit-like habits the only sign of the presence is the tell-tale mounds of loose soil. The southwestern pocket gopher is found in friable soils at any elevation on the mountain. Although most persons consider the gopher vermine because they eat plant roots, their burrowing in the soil is beneficial by aerating it and enabling it to more readily absorb water and air. This seems to be a fair exchange for the plants it destroys.

MEXICAN POCKET GOPHER - *Cratogeomys castonops*

It is difficult for the layman to tell the difference between the southwestern and Mexican pocket gopher. The Mexican pocket gopher is larger, yellowish in color, and has a deep single groove down the middle of each upper incisor. They both are found in the grassland areas of the Sandias.

POCKET MICE AND KANGAROO RATS - Heteromyidae

The family Heteromyidae boasts the kangaroo rats and pocket mice which are uniquely adapted to the arid West. They rarely drink. To aid digestion, they manufacture water from starch in the seeds they eat. During the heat of the day, they keep cool in burrows under desert shrubs. Masters of camouflage, they usually have a coat which blends in with the sandy-colored desert. They all have fur-lined external cheek pouches.

SILKY POCKET MOUSE - *Perognathus flavus*

Like all members of the pocket mouse family, the silky pocket mouse has cheek slits which open into fur-lined pouches, a broad head, and grooved upper front teeth. The silky pocket mouse is 4 to 4-3/4 inches long and has soft, pale fur with white underparts.

The silky pocket mouse is found in the grassland areas of the Sandias. This tiny seed hunter lives a solitary life except during mating season.

HISPID POCKET MOUSE - *Perognathus hispidus*

The Hispid pocket mouse is about twice as large as the silky pocket mouse. It differs from the silky by having harsh brown fur with bristly hairs on rump and tail. The Hispid pocket mouse is primarily a grassland dweller and is found only in the arid foothills of the Sandias.

BANNERTAIL KANGAROO RAT - *Dipodomys spectabilis*

Kangaroo rats have extremely long hind legs, short front legs, and small front feet. The tail, longer than their body, props them up when resting and stabilizes them when they hop. The bannertail has large eyes and cheek slits which open into fur-lined pouches. It has a handsome coat of bold stripes against sandy brown with an elegant white-tipped tail. Its length is from 12 to 15 inches, with a tail 7 to 9 inches long.

The bannertail kangaroo rat is found in the low grassland areas of the Sandias. This solitary kangaroo rat, so named because it looks like a small kangaroo when moving, digs elaborate tunnels topped by broad mounds.

ORD KANGAROO RAT - *Dipodomys ordi*

The Ord kangaroo rat is similar to the bannertail in habits and general appearance except that it is smaller, does not have a white-tipped tail and does not have as strikingly colorful a coat as the bannertail. The Ord is commonly found in the open grasslands and foothill areas of the Sandias.

NATIVE RATS, MICE, AND VOLES - Cricetidae

Most native rats and mice belong to the Cricetidae, the largest family of North American mammals, with more than 300 forms. Members of this family vary considerably from the 3 inch pigmy mouse to the 24 inch muskrat.

WESTERN HARVEST MOUSE - *Reithrodontomys megalotis*

A small mouse, $5\frac{1}{4}$ to $6\frac{1}{4}$ inches long, with a long scantily haired tail and conspicuous ears. Its coat is browner or more buffy colored than the house mouse. The harvest mouse is common in the Sandias. It feeds on seeds, green vegetation and some insects.

WHITE-FOOTED MOUSE - *Peromyscus leucopus*

The white-footed mouse is difficult for the laymen to distinguish from the deer, brush, pinyon, and rock mice. The tail is usually shorter than head and body. Head and body length is from $3\frac{3}{4}$ to $4\frac{1}{5}$ inches, with the tail $2\frac{2}{5}$ to 4 inches. Upperparts are pale to rich reddish brown. Belly and feet are white. The white-footed mouse is found in the foothill grasslands of the Sandias. It feeds on seeds, nuts, and insects.

DEER MOUSE - *Peromyscus maniculatus*

This is a medium to large mouse $4\frac{3}{4}$ to 9 inches long. Upperpart color varies from gray or sandy to deep or golden brown, usually sharply demarcated from the white or whitish underparts. It has large ears and eyes, with a short-haired tail as long or longer than the head and body. A common nocturnal feeder found on the Sandia Mountains at higher elevations.

BRUSH MOUSE - *Peromyscus boylei*

A common resident of the Sandia Mountains, with color varying from soft grayish to medium brown, becoming more or less buffy brown on sides. The tail is hairy. Usually found where oak grows, though occasionally found in pinyon-juniper woodlands.

PINYON MOUSE - *Peromyscus truei*

A common resident of the rocky areas in pinyon-juniper woodlands. The pinyon deer mouse has very large ears, sooty-brown fur with buffy over-cast becoming fairly clear on lower sides, and a tail that is dark on top and light below.

ROCK MOUSE - *Peromyscus difficilis*

A rare resident of the Sandias in the arid, rocky and brushy terrain of pinyon-juniper woodland. Like the pinyon deer mouse in physical appearance, but the rock deer mouse has a longer tail, being equal to or greater in length than its head and body length combined.

NORTHERN GRASSHOPPER MOUSE - *Onychomys leucogaster*

The grasshopper mouse is distinguished from other mice by its short white-tipped tail and stout body. It has a gray or pinkish-cinnamon coat and a head and body length of 4 to 5 inches. The northern grasshopper mouse is carnivorous, eating insects, scorpions, other mice, lizards, and some seeds. They live in burrows of other animals in the foothill grasslands of the Sandia Mountains.

WHITETHROATED WOODRAT - *Neotoma albigula*

The whitethroated woodrat, or pack rat, has large hairy ears, large protruding eyes, soft creamy buff colored fur, and a fairly long hairy (not scaly) tail. It has white hair on the throat, belly, and feet. It is about the size of a small squirrel--13 to 16 inches long. The whitethroated woodrat is commonly found in the Sandias in grassy foothills and juniper-pinyon woodlands. It is an avid storer of berries, fruit, seeds, herbs, grasses, and pulp of cactus joints. They give warning signals by thumping their hind feet.

SOUTHERN PLAINS WOODRAT - *Neotoma micropus*

The southern plains woodrat lives in semi-arid bushland and grasslands. It is $7\frac{1}{2}$ to $8\frac{1}{2}$ inches long, with a $5\frac{1}{2}$ to $6\frac{1}{2}$ inch tail. Its underparts are steel-gray. The hairs of the throat, breasts and feet are white.

MEXICAN WOODRAT - *Neotoma mexicana*

The Mexican woodrat is closely related to the whitethroated woodrat and the southern plains woodrat, but is usually found in more rocky terrain and has a more grayish coat. It is common in the mixed coniferous and spruce-fir areas of the Sandias.

LONGTAIL VOLE - *Microtus longicaudus*

The longtailed vole, or field mouse, is a stocky, short-eared rodent with beady black eyes. It has a total length of 6 to 8 inches with a 2 to 3½ inch tail. Upper body color will vary from grayish to dark brown, with blackish overcast. Underparts and feet are dingy white. An extremely active mouse that will eat its own weight in vegetation every 24 hours. Common in the Sandias.

PORCUPINE - Erethizontidae

PORCUPINE - *Erethizon dorsatum*

The porcupine has a short wide body supported by bowed legs with a heavy muscular tail and is covered with quills. It is a black to grizzled black and yellow rodent, 18 to 22 inches long weighing 10 to 28 pounds.

The porcupine is usually associated with coniferous forests, but may be found in all vegetation zones up to timberline. With an extremely effective defense system of quills covering most of its body, it has little to fear from most animals. Only the fisher, bobcat, and puma can manage a meal without injury. They flip the squat rodent over and attack its unprotected belly. Slow moving and possessing extremely poor vision, it can be easily approached. Porcupines feed on the bark of trees and often girdle trees, resulting in serious damage to the forest if they are too numerous.

HARES AND RABBITS - Lagomorpha

BLACK-TAILED JACKRABBIT - *Lepus californicus*

The jackrabbit is a hare--not a true rabbit. The young of hares are born fully furred, with eyes open, and are able to move about a few minutes after birth. Young rabbits are born hairless with eyes closed, and are helpless. Hares are larger than rabbits and have larger hind feet and ears. The black-tailed jackrabbit differs from other jackrabbits by having the top side of its tail and tips of its ears blackish. The rest of the coat is grayish or sandy color. Black-tailed jackrabbits are 19 to 25 inches long, with ears 6 to 7 inches in length, and will weigh from 4 to 7½ pounds.

The jackrabbit is a dweller of the open plains in the foothills of the Sandia Mountains where it feeds on grasses and herbs. It will seek safety from its numerous enemies by running, not hiding. When predators are eliminated from its habitat, it will become so numerous that it will strip the land of its natural forage, leaving little for livestock or other wildlife.

DESERT COTTONTAIL - *Sylvilagus auduboni*

The desert cottontail is similar to the common eastern cottontail, except that it has longer ears and legs. It is smaller, being only 14 to 17 inches long and weighing $1\frac{1}{2}$ to 3 pounds. Its coat is lighter brown with a rather coarse hair. The "powder puff" tail is the best field mark by which to recognize this species. If found in open grassland areas on the Sandia area, one can assume that the rabbit is a desert cottontail.

The desert cottontail is found from the grasslands to mid-juniper-pinyon woodlands on the Sandia Mountains. It is common in this area, but is not often seen in daytime. They feed in the summer on herbaceous plants and during winter months on bark and twigs.

EASTERN COTTONTAIL - *Sylvilagus floridanus*

The cottontail found in the high spruce-fir areas of the Sandias is believed to be the eastern species, but has yet to be definitely identified.

The eastern cottontail is seldom found below the ponderosa pine zone. It differs from the desert cottontail by being more grayish in color and having shorter ears and legs. It is between 14 and 16 inches long and weighs from $1\frac{1}{2}$ to 3 pounds.

HOOFED ANIMALS - Artiodactyla

MULE DEER - *Odocoileus hemionus*

A large-eared deer with a tail either all black above or black tipped. Total length ranges from 5 to $6\frac{1}{2}$ feet and height at shoulder from 3 to $3\frac{1}{2}$ feet. Weight varies from 100 to 300 pounds. Bucks are larger than does. Its coat is reddish during the summer months and blue-gray during the winter. Bucks possess antlers which are shed in early spring each year. The mule deer can be told from the white-tailed deer by the large mule-like ears and its habit of holding its tail down instead of raised when alarmed and running.

The mule deer is common in the Sandias and is the most common big game animal in the State. Population on the Sandias will vary from year to year with food supply but is estimated at about 2,500 animals. Because the Sandias are a State Game Refuge, deer may be harvested only by bow and arrow hunters during a designated hunting season.

This type of hunting has helped in preventing the deer population from over-browsing its available food supply, without unduly endangering the many human visitors or other wildlife.

The mule deer can be seen all over the mountain from pinyon-juniper areas of the lowlands to the spruce-fir areas of the rim. It generally feeds on leaves, buds, and twigs from shrubs and trees.

Mule deer antlers are impressively large. The antlers are small spikes the first year and may be five or more points on each side as the bucks grow older.

The mule deer can often be seen while driving along the Crest Road and from the tramway or chairlift early in the morning or late evening.

ROCKY MOUNTAIN BIGHORN SHEEP - *Ovis canadensis*

A stocky, powerful animal with a large, whitish rump patch. Mature males have large, heavy, curving horns, while young males and females have considerably smaller, more slender horns. A mature male or ram is $4\frac{2}{3}$ to 6 feet long and 3 to $3\frac{2}{3}$ feet at the shoulder. It will weigh up to 320 pounds. A female, or ewe, is smaller, weighing 160 pounds, and measures $2\frac{1}{2}$ to 3 feet high at the shoulder and $4\frac{1}{6}$ to $5\frac{1}{6}$ feet long. The color will vary from dark-gray in winter to brownish-gray in the summer.

The Sandias support the largest population of this magnificent game animal in the State of New Mexico. Bighorn sheep were native to most of the prominent mountain ranges within the State, but were exterminated in the late 1800's by uncontrolled hunting and by diseases brought into their high mountain ranges by domestic sheep. Bighorns were reintroduced into the Sandia range by the New Mexico Department of Game and Fish in 1939 from herds in Alberta, Canada. From the original nine bighorns stocked by the Game and Fish Department the herd has grown to over a hundred animals. Mature rams have been hunted on a limited basis on three different occasions with a total of fifteen rams taken during three hunts. Because of the apparent stability of the Sandia herd, trapped ewes and young have been used for transplanting into the Pecos and Gila Wilderness areas in an attempt to reestablish the sheep in these former ranges. Although the bighorn can only be found on the extremely steep and rugged west face of the Sandia Mountains, they are commonly seen along the rim by visitors during the summer months. Unlike deer, which are extremely wary, the bighorn can often

be approached. The sheep are usually seen along the rim trail between the Crest and the Summit House, especially in the area of the Kiwanis Meadow where a salt lick is located. By sitting quietly along the rim of the mountain, especially early in the morning, one may occasionally hear and see bighorns moving along the steep rugged slopes below the rim. It may take several trips to see the bighorns in their natural habitat. A view of the magnificent Rocky Mountain bighorn sheep will remain in the mind of the viewer forever.

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